

1. An electric heater assembly using compacted powdered media having controlled electrical resistivity for generating heat.

2. The electric heater assembly in accordance with claim 1 wherein the resistivity of said powdered media ranges from 3 to 95 Ω -mm.

3. The electric heater assembly in accordance with claim 1 wherein the resistivity of said powdered media ranges from 8 to 30 Ω -mm.

4. The electric heater assembly in accordance with claim 1 wherein said powdered media comprises a powder selected from the group consisting of SiC, C, Mo, W, TiN, MoSi₂, Al₂O₃, MgO, TiB₂, Si₃N₄, and TiO₂, BN.

5. The electric heater assembly in accordance with claim 1 wherein said powdered media comprises a mixture of an electrical conductive powder and an electrical non-conductive powder.

6. The electric heater assembly in accordance with claim 1 wherein said powdered media comprises a mixture of carbon powder and a powder selected from the group consisting of SiC, TiO₂, Si₃N₄ and SiO₂, BN.

7. The electric heater assembly in accordance with claim 1 wherein said powdered media comprises a mixture of carbon and SiC powder.

8. The electrical heater in accordance with claim 1 wherein said powdered media has a melting point in the range of 800° to 4000°C.

9. The electrical heater in accordance with claim 1 wherein said powdered media has an average particle size in the range of 0.5 to 1500 microns.

10. An electrical heater assembly using electrical resistive powdered media for generating heat on passage of electrical current.

11. The electric heater assembly in accordance with claim 10 wherein resistivity of said powdered media ranges from 5 to 75 Ω -mm.

12. The electric heater assembly in accordance with claim 10 wherein resistivity of said powdered media ranges from 10 to 55 Ω -mm.

13. The electric heater assembly in accordance with claim 10 wherein said powdered media comprises a powder selected from the group consisting of SiC, C, Mo, W, TiO₂, Si₃N₄, SiO₂ and BN.

14. The electric heater assembly in accordance with claim 10 wherein said powdered media comprises a mixture of an electrical conductive powder and an electrical non-conductive powder.

15. The electric heater assembly in accordance with claim 10 wherein said powdered media comprises a mixture of carbon powder and a powder selected from the group consisting of SiC, TiO₂, Si₃N₄, SiO₂ and BN.

16. The electric heater assembly in accordance with claim 10 wherein said powdered media comprises a mixture of carbon and SiC powder.

17. An electrical heater in accordance with claim 10 wherein said powdered media has a melting point in the range of 800° to 4000°C.

18. An electrical heater in accordance with claim 10 wherein said powdered media has an average particle size in the range of 5 to 3000 microns.

19. A heating member comprised of a compacted powdered media for an electrical heater.

20. The heating member in accordance with claim 19 wherein the resistance of said powdered media ranges from 3 to 95 Ω -mm.

21. The heating member in accordance with claim 19 wherein the resistance of said powdered media ranges from 8 to 30 Ω -mm.

22. The heating member in accordance with claim 19 wherein said powdered media comprises a powder selected from the group consisting of SiC, C, Mo, W, TiN, MoSi₂, Al₂O₃, MgO, TiB₂, Si₃N₄, and TiO₂, BN.

23. The heating member in accordance with claim 19 wherein said powdered media comprises a mixture of an electrical conductive powder and an electrical non-conductive powder.

24. The heating member in accordance with claim 19 wherein said powdered media comprises a mixture of carbon powder and a powder selected from the group consisting of SiC, TiO₂, Si₃N₄ and SiO₂, BN.

25. The heating member in accordance with claim 19 wherein said powdered media comprises a mixture of carbon and SiC powder.

26. The heating member in accordance with claim 19 wherein said media has a melting point in the range of 800° to 4000°C.

27. The heating member in accordance with claim 19 wherein said powdered media has an average particle size in the range of 5 to 3000 microns.

28. An electric heater assembly comprised of:

- (a) a container having an electrically insulating inside surface layer;
- (b) a compacted powdered heating media having a controlled electrical resistivity contained in said container;
- (c) a first electrical current conduction means contacting said powdered media; and
- (d) a second electric current conduction means contacting said powdered media to permit electric current to flow from said first means through said powdered media to said second means, the electrical resistivity of said media generating heat upon flow of said electric current.

29. The electric heater assembly in accordance with claim 28 wherein the resistivity of said powdered media ranges from 5 to 75 Ω -mm.

30. The electric heater assembly in accordance with claim 28 wherein the resistivity of said powdered media ranges from 10 to 55 Ω -mm.

31. The electric heater assembly in accordance with claim 28 wherein said powdered media comprises a powder selected from the group consisting of SiC, C, Mo, W, TiO₂, Si₃N₄, SiO₂ and BN.

32. The electric heater assembly in accordance with claim 28 wherein said powdered media comprises a mixture of an electrical conductive powder and an electrical non-conductive powder.

33. The electric heater assembly in accordance with claim 28 wherein said powdered media comprises a mixture of carbon powder and a powder selected from the group consisting of SiC, TiO₂, Si₃N₄, SiO₂ and BN.

34. The electric heater assembly in accordance with claim 28 wherein said powdered media comprises a mixture of carbon and SiC powder.

35. The electrical heater in accordance with claim 28 wherein said powdered media has a melting point in the range of 800° to 4000°C.

36. The electrical heater in accordance with claim 1 wherein said powdered media has an average particle size in the range of 5 to 3000 microns.

37. The electric heater assembly in accordance with claim 28 wherein said electrically insulating inside surface layer is comprised of alumina, magnesia, mullite, silicon carbide, silicon nitride or SiAlON .